REMARKS

The Office Action of February 24, 2005 has been received and its contents carefully considered.

Claims 1, 2, 4, 17 and 19 to 24 are all the claims pending in the application, prior to the present amendment.

Claim 23 has been rejected under the first paragraph of 35 U.S.C. § 112 as failing to comply with the written description requirement.

The Examiner sets forth two reasons for this rejection.

First, the Examiner states that the thickness of 3.3 mm recited in claim 23 is not supported.

Second, the Examiner argues that there is no support in the original specification for the newly claimed end points of "62% or more" light transmittance and "8.3% or less" haze.

In response, applicants have amended claim 23 as set forth above to delete reference to the thickness of 3.3 mm and to delete reference to the light transmittance and haze, and the numerical values for light transmittance and haze.

Applicants have amended claim 23 to recite that the molding is "transparent". See, for example, page 16, line 21 to page 17, line 3 for support.

In addition, applicants have made a number of other amendments to claim 23.

Support for the various amendments to claim 23, as well as support for the amendments to claim 24 which has been amended in a similar manner, is set forth below.

The recitation of "an intermediate layer and an antistatic layer both being laminated on both sides of the base layer" is supported at page 17, line 19 to page 18, line 4, and in the second paragraph at page 43 of the present specification.

The recitation "free from any titanium compound" is supported in Examples 10 and 14 of the present specification and the description at page 75, lines 12 to 21.

Regarding a "transparent" molding and "the antistatic layer being transparent", it is described at page 16, line 21 to page 17, line 3 of the present specification.

In view of the above, applicants submit that claim 23 complies with the written description requirement of the second paragraph of 35 U.S.C. § 112 and, accordingly, request withdrawal of this rejection.

Claims 1, 2, 17, 20, 21, 22 and 24 have been rejected under 35 U.S.C. § 103(a) as obvious over JP '230 to Watanabe in view of Yoshizumi.

The Examiner sets forth a detailed discussion of this rejection in Paragraph 6, beginning at page 4 of the Office Action.

In this detailed discussion, the Examiner specifically discusses claim 19 at page 4 of the Office Action. Accordingly, although claim 19 is not included in the statement of the rejection, applicants consider it to be included in the rejection.

Applicants have cancelled claims 1, 17 and 22, leaving only claims 2, 19, 20, 21 and 24 as being subject to this rejection. Of these claims, 2 and 24 are independent.

Applicants have amended claims 2 and 24 to direct them to five layered structures comprising a base layer containing a chlorinated poly (vinyl chloride) having a chlorination

degree of from 58 to 73%, free from any titanium compound, and having a thickness of from 1 to 15 mm, an intermediate layer, provided on both surface of the base layer, containing a chlorinated poly(vinyl chloride) having a chlorination degree of from 58 to 73%, and free from any titanium compound, and having a thickness of 30 to 350 μm (claim 2) or 50 to 350 μm (claim 24) and an antistatic layer provided on both of the intermediate layers. Since such a structure is not set forth in JP '230 of Yoshizumi, applicants submit that these documents do not defeat the patentability of the present claims.

Support for the amendments to claim 2 is set forth below. Support for the amendments to claim 24 has been discussed above.

The recitation of "an intermediate layer and an antistatic layer both being laminated on both sides of the base layer" is supported at page 17, line 19 to page 18, line 4, and in the second paragraph at page 43 of the present specification.

The recitation "free from any titanium compound" is supported in Examples 10 and 14 of the present specification and the description at page 75, lines 12 to 21.

Regarding "transparency", the present specification discloses at various places the transparency of a three-layer structure. Further, since a three-layer structure is transparent, it can be readily understood that introduction of a transparent intermediate layer and a transparent anti-static layer to the transparent three-layer structure results in a still transparent product.

Applicants set forth below an identification of various places where transparency is discussed in the present specification.

A "transparent" molding as set forth in claim 2 is described at page 5, line 25 to page 6, line 12, and at page 10, line 22 to page 11, line 15 in the present specification.

A "transparent" base layer is described at page 23, line 22 to page 24, line 9 of the present specification.

"Transparency" of the resin plate B (a plate comprised of a base layer and an antistatic layer) is described at page 34, line 21 to page 35, line 11, and at page 40, line 21 to page 41, line 4 of the present specification.

A "transparent" intermediate layer is described at page 50, lines 11 to 16.

A "transparent" three-layer structure is described at page 51, lines 1 to 20.

A "transparent" two-layer structure is described in Example 2, Table 1, and page 61, lines 3 to 25 in the present specification.

A "transparent" three-layer structure is described in Examples 10, 14 and 15 and Table 2 of the present specification.

Turning now to the substance of the rejection, applicants submit that JP '230 does not disclose or render obvious the subject matter of claims 2 and 24 of the present application.

JP '230 is directed to a laminate that comprises (a) a base layer of PVC having a chlorination degree of from 58 to 73% and 4 to 30 parts by weight of titanium oxide, and having a thickness of from 2 to 12 mm, and (b) a surface layer of PVC having a chlorination degree of from 50 to 57%, 0 to 20 parts by weight titanium dioxide and a thickness of from 0.2 to 1.6 mm.

As discussed above, claims 2 and 24 have been amended as follows:

(1) The structure has been amended to a five-layer one in which an intermediate layer and an antistatic layer are provided on both surfaces of the base layer, and

(2) the molding has been amended so as to exclude any titanium compound from not only the base layer but from the intermediate layer, and has transparency and antistatic property on both surfaces.

With the structure in (1) above, the molding has antistatic property on both surfaces, will not curl (in case where the antistatic property is imparted only to a single surface, problems such as curling occur due to the difference of elongation and compression between the two surfaces) thus achieving improved handling property.

By virtue of the conditions in (2) above, in which any titanium compound is excluded from the base layer and the intermediate layer, claims 2 and 24, and the claims dependent thereon clearly patentably distinguish over the moldings of JP '230 which contain 4 to 30 parts of titanium dioxide in the base layer, and which can contain 0 to 20 parts by weight titanium dioxide in the surface layer. JP '230 does not disclose or suggest moldings that do not contain any titanium compound in the base layer.

The moldings of JP '230 which contain 4 to 30 parts by weight of titanium dioxide in the base layer are inevitably opaque. In contrast, the moldings according to the present invention as set forth in claims 2 and 24 are transparent and contain transparent constituent layers.

Further, applicants submit that JP '230 does not disclose or suggest a molding that contains an intermediate layer comprised of a vinyl chloride resin having a degree of chlorination of 58 to 73% as recited in claims 2 and 24.

In the present rejection, the Examiner considers the molded object of JP '230 to correspond to the base layer of the present claims, and considers the surface layer of JP '230 to correspond to applicants' claimed intermediate layer.

The Examiner recognizes that the intermediate layer (surface layer) in JP '230 has a chlorination degree of 50 to 57% and does not satisfy the claimed range of 58 to 73% of the intermediate layer of claims 2 and 24. The Examiner argues at page 5 of the Office Action that a prima facie case of obviousness exists where the claimed ranges and the prior art ranges do not overlap, but are close enough that one of ordinary skill in the art would have expected them to have the same properties. The Examiner argues that in the present case, one would have expected a chlorination degree of 57% as disclosed in JP '230 to have the same properties as an intermediate layer with a chlorination degree of 58%.

Applicants submit, however, as discussed in greater detail below, that one of ordinary skill in the art would not have expected a vinyl chloride resin with a chlorination degree of 57% to have the same properties as a vinyl chloride resin with a chlorination degree of 58% or more, and that JP '230 teaches against employing a chlorination degree of 58% or more for the intermediate (surface) layer.

Alternatively, the Examiner argues at page 5 of the Office Action that JP '230 teaches that the chlorination degree of a polymer will affect its fire resistance, thermal stability and moldability and, therefore, it would have been obvious to optimize the chlorination degree of the intermediate layer in JP '230.

Again, applicants submit, as discussed in greater detail below, that JP '230 teaches against such an optimization for the intermediate (surface) layer of JP '230.

As discussed above, the structure according to JP '230 has a base layer comprising a vinyl chloride resin having a chlorination degree of 58 to 73% and 4 to 30 parts by weight of titanium oxide, and a surface layer comprising a vinyl chloride resin having a chlorination degree of 50 to 57% and 0 to 20 parts by weight of titanium oxide.

The use of such a surface layer in JP '230 was intended by JP '230 to improve the chemical resistance, as described in the claims therein. These conditions of JP '230 are clearly set forth in paragraphs [0018], [0032], [0038], etc. of JP '230. Moreover, JP '230 in paragraph [0039] clearly describes that vinyl chloride resins with a chlorination degree of 58% or more are excluded as being used as a surface layer.

Thus, JP '230, in Paragraph [0039], discloses that the use of PVC in a surface layer having a chlorination degree of 58% or more is excluded. In particular, JP '230 in paragraph [0039], as set forth in the computer translation, states as follows:

> Since the resin of 58% or more of vinyl chloride system has neither chemical resistance nor so good elongation, ...[it] <u>is unsuitable as a resin of a surface layer</u>...(Emphasis added).

Since the surface layer of JP '230 is employed with the aim of improving chemical resistance using a PVC having a chlorination degree of from 50 to 57° [cf.0018], the use of a PVC having chlorination degree of from 58 to 73%, which is inferior in chemical resistance, cannot be deduced from JP '230.

It is difficult to understand why the Examiner states that the excluded vinyl chloride resins of JP '230 can be easily used in the surface layer of JP '230. If the Examiner judges that, since the chlorination degree is similar, they can be easily used, such reasoning is not correct because one of ordinary skill in the art would neither easily adopt nor surmise such resins without any special reason.

In particular, as applicants pointed out in the Amendment Under 37 C.F.R. § 1.111 filed on December 3, 2004, PVC having a chlorination degree of 57% differs from PVC having a chlorination degree of 58% in point of their resin properties.

In ordinary reaction, PVC is produced to have a chlorination degree of 56.8%. This is PVC (U-PVC) ordinarily used in the art. A resin prepared by further chlorinating the ordinary U-PVC with chlorine gas added thereto is a chlorinated polyvinyl chloride, that is, a polyvinyl chloride resin (C-PVC) having a chlorination degree of 58% or more.

Accordingly, C-PVC requires one additional step for its production and is, therefore, expensive, as compared with U-PVC. Further, C-PVC is more rapidly decomposed as its chlorine content is large, and, in addition, its chemical resistance and processability are not good. C-PVC is characterized in that its heat-resisting temperature is high. The differences between the two, U-PVC and C-PVC, are well known by one skilled in the art, and are differentiated in their practical use. If the expression of U-PVC or C-PVC is not given to PVC products, then the products may be erroneously used and may cause problems.

To that effect, PVC having a chlorination degree of at most 57% and PVC having a chlorination degree of at least 58% are different resins that are produced by different methods,

though they may be referred to as the same designation of "polyvinyl chloride". Therefore, even though 57% PVC is described in JP '230 to Watanabe, it is impossible to directly employ 58% PVC in place of the 57% PVC.

Thus, a vinyl chloride resin having a chlorination degree of 58 to 73% is regarded as a different resin from one having a chlorination degree of 50 to 57%, and, therefore, adoption of the former resin in place of the latter resin as suggested by the Examiner means alteration of the resin. Such alteration is still more difficult to be adopted, especially since there is no motivation to do so.

The Examiner acknowledges at page 18 of the Office Action that the differences between U-PVC and C-PVC, which are set forth above and which were described at pages 10 and 11 of the Amendment of December 3, 2004, are well known in the art. The Examiner argues at page 18 of the Office Action that these differences are not in JP '230.

Applicants submit, however, that these differences are, in fact, disclosed in JP '230, at least with respect to chemical resistance, for example. See paragraph [0018] of JP '230. Further, since the Examiner admits that these differences are well known, applicants submit that the Examiner should not require evidence of these differences.

The Examiner argues at page 18 of the Office Action that since the skilled person was well aware of the differences, it follows that the various laminates disclosed by applicants would have been obvious based on the desired balance of properties . Applicants submit, however, that this argument assumes that one of ordinary skill in the art has a concept of what is a desired balance of properties and would know how to achieve the desired balance.

JP '230, however, does not teach that a desired balance of properties can be obtained by the combination set forth in the present claims and, in fact, teaches against such a combination.

The present application teaches that a set of desired properties can be obtained by the combinations set forth in the present claims. JP '230 does not disclose or suggest this combination. In fact, JP '230 by stating in paragraph [0039] that a vinyl chloride resin having a chlorination degree of 58% "is unsuitable as a resin of a surface layer", teaches against arranging the layers in a manner to achieve the combination set forth in the present claims, and does not recognize or suggest that the combination in the present claims, in fact, provides a desired balance of properties.

Similarly, the Examiner states at page 18 of the Office Action that any desired properties can be achieve by those skilled in the art, since those skilled in the art know the various properties of 58% PVC and 57% PVC. The Examiner, however, appears to not recognize that there is no teaching in JP '230 art that the specific combination set forth in the present claims would produce desirable properties. In fact, as discussed above, JP '230 teaches against this combination.

As stated above, since there is a description in JP '230 in paragraph [0039] that a vinyl chloride resin having a chlorination degree of 58% or more is "unsuitable" and therefore not used for the surface layer, a resin having a chlorination degree of 58% or more would never be used by one of ordinary skill in the art without a certain special purpose. If such a resin is intentionally used a certain motivation is needed. But, there is no such motivation in JP '230, which, on the contrary, contains a description that such a resin is not to be used.

Further, since those skilled in the art recognize the differences of chlorinated poly(vinyl chloride) (i.e. C-PVC) from poly(vinyl chloride), they would not have been led to using chlorinated poly(vinyl chloride), especially since JP '230 describes that chlorinated poly(vinyl chloride) is not to be used in the surface layer (intermediate layer). The reason is that those skilled in the art can comprehend the disadvantages of using chlorinated poly(vinyl chloride) for the surface layer in advance.

The present invention uses chlorinated poly(vinyl chloride) for the intermediate layer because the fire-retardant property need be given priority, even at the expense of chemical resistance to some extent. Such an idea is not disclosed or suggested by JP '230.

With respect to the expected properties of materials that have ranges close to each other, the Examiner argues at page 16, last five lines to page 17, line 3 of the Office Action that applicants have not provided any evidence that demonstrates that in the present case, an intermediate layer having a chlorination degree of 57% as disclosed by Watanabe '945 (sic) would not have the same properties as an intermediate layer with a chlorination degree of 58%. (Applicants believe the Examiner intended to refer to Watanabe '230 instead of Watanabe '945).

The Examiner similarly argues at page 18 of the Office Action that applicants have not provided any evidence to support the argument that one would not employ 58% PVC in place of 57%.

With respect to the Examiner's assertion that applicants have not provided any evidence to support their arguments, applicants again point out that JP '230 itself discloses in paragraph [0039], as quoted above from the computer translation, that a resin of having a chlorination

degree of 58% or more has poor chemical resistance and "is unsuitable as a resin of a surface layer", and discloses in paragraph [0018] that a vinyl chloride resin and a chlorinated vinyl chloride resin (C-PVC) are different in chemical resistance, and that a chlorination degree of 50 to 57% is good for chemical resistance.

Thus, evidence is of record, and is contained in the very document cited by the Examiner, that one of ordinary skill in the art would expect different properties and would not employ one in the place of the other. The Examiner simply has chosen to ignore and not comment on this evidence.

Even though the chlorination degree is similar, applicants submit that one of ordinary skill in the art would not be led using a resin having a chlorination degree of 58% or more in place of a resin having a chlorination degree of 57%, especially when the cited document specifically states that the resin having a chlorination degree of 58% or more "is unsuitable as a resin of a surface layer" and therefore is required by the teachings of the document to be excluded from use.

Moreover, with an increase in the chlorination degree of the resin, the ratio of dechlorination rises during heat molding, causing the resin to get yellow due to resin decomposition. For this reason, a formulation for molding a vinyl chloride resin is necessarily different from that for molding a chlorinated vinyl chloride resin. In this way, the aforementioned resin alteration does not end with the alteration of resin itself, but inevitably causes some accompanying changes. From such a viewpoint, too, those skilled in the art regard

the two resins as belonging to different types. Further, without a significant reason for alteration, resin alteration can never be conducted so easily.

(In the Office Action, the Examiner comments at page 17 that applicants' arguments set forth in the Amendment of December 3, 2004 do not agree in scope with the rejected claims, and points out that claims 1, 2, 17 and 20 to 22 do not require the base layer to have a chlorination degree of 50 to 57%. Applicants understand this comment to be directed to the argument at page 10, first paragraph of the Amendment of December 3, 2004, where applicants stated that in the absence of a specific reason to do so, it is impossible to convert the laminate of JP '230 into a laminate that comprises a base layer having a chlorination degree of from 50 to 57% and a thickness of from 2 to 12 mm and a surface layer having a chlorination degree of from 58 to 73% and a thickness of from 0.2 to 1.6 mm. Applicants hereby clarify that argument and submit that the Examiner has misinterpreted applicants' argument.

Applicants' agree that claims 1, 2, 17 and 20 to 22 did not require a base layer with a chlorination degree of from 50 to 57%. Applicants did not argue that they did. Applicants argument concerning the impossibility of converting the laminate of JP '230 was intended to be directed to claim 1, now canceled, and was based on the premise that in order to arrive at a molding having an intermediate layer containing a 58 to 73% chlorination degree from the teachings of JP '230, one would have to interchange the base layer and surface layer of JP '230, so that the material of the base layer of JP '230 would be present in the surface layer of JP '230 and the material of the surface layer of JP '230 would be present in the base layer. Such an interchange would be required to arrive at the intermediate layer of claim 1, now canceled,

having a chlorination degree of 58 to 73%, but there is no teaching in JP '230 to make such a conversion).

(Applicants note that in the previous Amendment Under 37 C.F.R. § 1.111 filed on December 3, 2004, in connection with claims 17 and 22, applicants argued that the thickness of the intermediate layer has no direct influence on chemical resistance and can be made as thin as 0.2 μm or less. Applicants argued that the thickness of the intermediate layer of claim 17 is limited to that not having any influence on the chemical resistance of the laminate. The Examiner states in the present Office Action that this argument of applicants' is contrary to the disclosure of the present specification. In particular, the Examiner refers to the ninth and tenth embodiments of page 13 of the present specification, which discusses selecting the chlorination degree of the intermediate layer to be less than 58% to provide a molding that has good chemical resistance and corrosion resistance. Applicants acknowledge that the thickness of the intermediate layer has a certain influence on chemical resistance. In any event, claims 17 and 22 have been canceled).

(Applicants enclose a complete translation of paragraph of [0041] to JP '230. In the Amendment Under 37 C.F.R. § 1.111 filed on December 3, 2004, at pages 11 and 13, applicants provided an abbreviated description of paragraph [0041]).

Turning now to Yoshizumi, the Examiner relies on Yoshizumi for a teaching of an antistatic layer.

Yoshizumi merely discloses the use of an antistatic coating on a base material. Yoshizumi does not contain any information on the use of a base layer that comprises a vinyl

chloride resin having a chlorination degree of from 58 to 73% and free from any titanium compound, wherein the thickness of the base layer is from 1 to 15 mm, in combination with the use of an intermediate layer that comprises a vinyl chloride resin having a chlorination degree of from 58 to 73% and free from any titanium compound, and has a composition different from that of the base layer, wherein the thickness of the intermediate layer is from 30 to 350 μm (claim 2) or 50 to 350 μm (claim 24). Thus, Yoshizumi does not supply the deficiencies of JP '230 with respect to claim 2 or claim 24.

Turning now to claim 19, which recites that the antistatic layer is comprised of a vinyl chloride resin having a chlorination degree of 58 to 73%, and the Examiner's reliance on the teachings of Yoshizumi with respect to claim 19, this patent discloses the use of various resins as a binder of an antistatic coating, among which a vinyl chloride resin is mentioned for use in an antistatic layer, but Yoshizumi does not teach or suggest the use of PVC having a chlorination degree of 58 to 73% in the antistatic layer.

The Examiner states at page 4, last paragraph of the Office Action that, because JP '230 discloses in Paragraph [0015] that the chlorination degree influences fire resistance, thermal stability and moldability, it would have been obvious to control the chlorination degree of an antistatic layer in order to control these properties.

Applicants point out, however, that the proposed antistatic layer functions as a surface layer. As discussed above, paragraph [0039] of JP '230 teaches against the use of a PVC having a chlorination degree of from 58 to 73% as a surface layer. Therefore, one of ordinary skill in

the art would not have been led to the use of an antistatic layer having such a chlorination degree as recited in claim 19.

Since claim 19 restricts the chlorination degree of the vinyl chloride resin used for the antistatic layer to from 58 to 73%, Yoshizumi does not disclose or suggest such a chlorination degree of the resin used for the antistatic layer.

The Examiner states at page 20 of the Office Action that with respect to the antistatic layer, the chlorination degree can be selected at will depending on required chemical and/or physical properties.

Thus, the Examiner argues at page 20 of the Office Action that JP '230 "does not explicitly teach against the use of PVC having a chlorination degree of from 58-73% as a surface layer", but teaches that the chlorination degree of the various layers of the PVC, including an antistatic layer, may be selected such that the resulting laminate has the desired combination of chemical and physical properties.

Contrary to the Examiner's statement that JP '230 does not explicitly teach against the use of PVC having a chlorination degree of from 58 to 73% as a surface layer, applicants again refer the Examiner to paragraph [0039] of JP '230 which states that a vinyl chloride resin having a chlorination degree of 58% or more "is unsuitable as a resin of a surface layer".

Moreover, the Examiner does not identify what are the desired combination of chemical and physical properties. The present application teaches that the combination set forth in the present claims results in a desired combination of chemical and physical properties. From the

teachings of JP '230, one of ordinary skill in the art would be led to expect that the combination of the present invention is not desirable.

Further, which kind of resin is used for the antistatic layer depends on the use application of the molding provided with this antistatic layer. Since Yoshizumi relates to an antistatic paint that can be used for various applications, it is necessary to select the most appropriate resin as the resin applicable to the fire-retardant vinyl chloride resin molding of the present invention. Yoshizumi describes that, in addition to vinyl-based polymers, various resins such as acrylic resin, polycarbonate, etc. can be used as the binder. And, to select a specific resin from these many resins, a special reason is necessary.

In addition, even if a vinyl chloride resin is ever selected as the binder from a large number of vinyl based resins, it is usually a common practice to adopt a vinyl chloride resin having a chlorination degree of 56.8% that is most widely in use. Intentional adoption of a vinyl chloride resin having a chlorination degree of from 58 to 73% requires a special reason, on which Yoshizumi is utterly silent, including no suggestion, either.

In paints using a vinyl chloride resin, poly(vinyl chloride) having a chlorination degree of 56.8% is usually used, and chlorinated poly(vinyl chloride) having a chlorination degree of from 58 to 73% is not used, because poly(vinyl chloride) is superior to chlorinated poly(vinyl chloride) in moldability, cost, chemical resistance, discoloration, weather resistance, etc. Even if there exists the fact that chlorinated poly(vinyl chloride) is superior to poly(vinyl chloride) in fire retardant property, formulation of a paint by using chlorinated poly(vinyl chloride) requires breaking-down of the conventional common sense, accompanying a serious risk. In other words,

such a risk cannot be challenged without a sufficient merit in the use of chlorinated poly(vinyl chloride).

Claim 19 uses a vinyl chloride resin having a chlorination degree of from 58 to 73% for the antistatic layer in order to ensure fire retardant property, although the layer is extremely as thin as 0.1 to 1.5 μm. By virtue of this measure, a transparent molding with enhanced fire retardant property has been obtained in claim 19 since all of the base layer, the intermediate layer and the antistatic layer are composed of a vinyl chloride resin having a chlorination degree of from 58 to 73%.

In the present application, chlorinated poly(vinyl chloride) is used in the antistatic layer recited in claim 19 to ensure the fire retardant property of the molding although the thickness of the antistatic layer is extremely thin.

The Examiner argues at page 20 of the Office Action that the chlorination degree of the antistatic layer, which applicants argued in the Amendment of December 3, 2004 is important, is not recited in the rejected claims. The Examiner points out that only claim 19 recites a chlorination degree for the antistatic layer, and that applicants (at page 14) of the Amendment of December 3, 2004 referred to claim 22.

The Examiner is correct that at page 14 of the Amendment of December 3, 2004, at line 11, applicants referred to claim 22 instead of claim 19. The reference to claim 22 was an error. Applicants intended to refer to claims 1 and 2, since the discussion at page 14 was intended to relate to the obviousness rejection based on JP '230.

The Examiner, however, is not correct that claim 19 was not included in the rejected claims. Although the Examiner's broad statement of the rejection in Paragraph 9 of the previous Office Action (and Paragraph 6 of the present Office Action) does not include claim 19, the Examiner's detailed statement of the rejections specifically refer to claim 19. See page 5, second full paragraph of the Office Action of September 3, 2004 and page 4, last paragraph of the present Office Action where the Examiner specifically refers to claim 19.

In view of the above, applicants submit that JP '230 to Watanabe and Yoshizumi do not render obvious the subject matter of the above claims and, accordingly, request withdrawal of this rejection.

Claims 1, 2, 17, 21, 22 and 24 have been rejected under 35 U.S.C. § 103(a) as obvious over JP '230 in view of Holley.

The Examiner sets forth a detailed statement of this rejection of Paragraph 7, beginning at page 6 of the Office Action.

This rejection is similar to the rejection in Paragraph 6 of the Office Action, except that the Examiner relies on Holley instead of Yoshizumi for teaching of an antistatic layer.

As noted above, claims 1, 17 and 22 have been canceled, thus leaving only claims 2, 21 and 24 as being subject to this rejection.

Applicants rely on the comments they set forth above in connection with the rejection in Paragraph 6 to distinguish over JP '230.

Further, with respect to the antistatic layer of independent claims 2 and 24, applicants acknowledge that one of ordinary skill in the art might consider that Holley suggests providing

an antistatic layer on the surface of a molding. The combination of JP '230 with Holley, however, would not have led one of ordinary skill in the art to the subject matter of claims 2 and 24 because neither of these references discloses or suggests the combination of the base layer and intermediate layer of claims 2 and 24.

Still further, Holley does not disclose or suggest the long carbon fiber recited in claim 24.

In addition, with respect to claim 21, it depends from claim 19 or 20.

Holley does not disclose or suggest the subject matter of claims 19 or 20, or the conductive materials of claim 21, and, therefore, does not disclose or suggest the subject matter of claim 21.

In particular, with respect to claim 19, Holley nowhere discloses the use of a vinyl chloride resin, and thus does not disclose or suggest the use of a vinyl chloride resin in an antistatic layer as set forth in claim 19, or the use of a vinyl chloride resin having a chlorination degree of 58 to 73% in an antistatic layer as recited in claim 19. With respect to claim 20, Holley does not disclose or suggest that a binder resin of an antistatic layer comprises a UV curing or thermosetting resin. The antistatic layer in Holley is obtained by coating a dispersion of an ammonium salt or the like in a water-soluble polymer. Specifically, Holley discloses polymers such as an acrylic resin, urethane, and ethylene/vinyl acetate copolymer. See col. 5, lines 32 to 35. However, UV-curable resins and thermo-setting resins as set forth in claim 20 are not set forth in Holley.

Further, Holley does not disclose or suggest the specific conductive materials of tin oxide, titanium oxide and carbon fiber set forth in claim 21.

Accordingly, applicants submit that claim 21 is patentable over JP '230 and Holley.

Though provision of an antistatic layer on the surface of a molding may be suggested by Holley, the specific antistatic layers set forth in claims 19 to 21 are never taught or suggested by Holley.

In view of the above, applicants submit that JP '230 and Holley do not disclose or render obvious the subject matter of claims 2, 21 and 24 and, accordingly, request withdrawal of this rejection.

Claims 1, 2, 4, 17, 19, 20, 21, 22 and 24 have been rejected under 35 U.S.C. § 103(a) as obvious over JP '945 in view of Yoshizumi.

The Examiner sets forth a detailed statement of this rejection in Paragraph 8, beginning at page 8 of the Office Action.

Claims 1, 4, 17 and 22 have been canceled, leaving only claims 2, 19, 20, 21 and 24 as being subject to this rejection. Of these claims, only claims 2 and 24 are independent. Claims 2 and 24 have been amended as discussed above.

Thus, in the present Amendment, claims 2 and 24 have been amended to recite a five-layer structure comprising a base layer containing a chlorinated poly(vinyl chloride) having a chlorination degree of from 58 to 73%, free from any titanium compound, and having a thickness of from 1 to 15 mm, an intermediate layer, provided on both surface of the base layer, containing a chlorinated poly(vinyl chloride) having a chlorination degree of from 58 to 73%, and free from any titanium compound, and an antistatic layer provided on both of the intermediate layers.

Since such a structure is not set forth in JP '945 or Yoshizumi, applicants submit that these documents do not defeat the patentability of claims 2 and 24.

JP '945 discloses a laminated body comprising (a) a base layer of a vinyl chloride resin containing 4 to 30 parts by weight of titanium oxide, and having a thickness of from 2 to 12 mm, and (b) a surface layer of a vinyl chloride resin containing a fire retardant such as titanium oxide, a molybdenum compound, etc, and having a thickness of from 0.2 to 1.6 mm. It contains a description on the use of a vinyl chloride resin having a chlorination degree of from 58 to 73% as the resin for the base layer, and the statement that the chlorination degree of the resin for the surface layer is from 50 to less than 58% from the viewpoint of chemical resistance.

As discussed above, claims 2 and 24 have been amended as follows:

(1) The structure has been amended to a five-layer one in which an intermediate layer and an antistatic layer are provided on both surfaces of the base layer, and

(2) the molding has been amended so as to exclude any titanium compound from not only the base layer but from the intermediate layer, have transparency and antistatic property on both surfaces.

With the structure in (1) above, the molding has antistatic property on both surfaces, will not curl (in case where the antistatic property is imparted only to a single surface, problems such as curling occur due to the difference of elongation and compression between the two surfaces) thus achieving improved handling property.

By virtue of the conditions in (2) above, in which any titanium compound is excluded from the base layer and the intermediate layer, claims 2 and 24, and the claims dependent

thereon clearly patentably distinguish over the moldings of JP '945 which contain 4 to 30 parts of titanium dioxide in the base layer, and which can contain 0 to 20 parts by weight titanium dioxide in the surface layer. JP '945 does not disclose or suggest laminate moldings that do not contain any titanium compound in the base layer.

The moldings of JP '945 which contain 4 to 30 parts by weight of titanium dioxide in the base layer are inevitably opaque. In contrast, the moldings according to the present invention as set forth in claims 2 and 24 are transparent and contain transparent constituent layers.

Further, applicants submit that JP '945 does not disclose or suggest a molding that contains an intermediate layer comprised of a vinyl chloride resin having a degree of chlorination of 58 to 73% as recited in claims 2 and 24. Applicants submit, as discussed in detail below, that JP '945 teaches against such a combination.

At page 9 of the Office Action, last paragraph, the Examiner recognizes that the intermediate layer (surface layer) in JP '945 having a chlorination degree of 50 to 57% does not satisfy the claimed range of 58 to 73%. The Examiner argues at page 9 of the Office Action that a prima facie case of obviousness exists where the claimed ranges and the prior art ranges do not overlap, but are close enough that one or ordinary skill in the art would have expected them to have the same properties. The Examiner argues that in the present case, one would have expected a chlorination degree of 57% as disclosed in JP '945 to have the same properties as an intermediate layer with a chlorination degree of 58%.

Applicants submit, however, as discussed above in connection with JP '230, that one of ordinary skill in the art would not have expected a vinyl chloride resin with a chlorination degree

of 57% to have the same properties as a vinyl chloride resin having a chlorination degree of 58% or more. The resins, in fact, are different and have different properties.

As discussed above, a polyvinyl chloride resin having a chlorination degree of 58% or more, as compared to a PVC having a chlorination degree of 50 to 57%, is expensive, is more rapidly decomposed as its chlorine content is large, and, in addition, its chemical resistance and processability are not good, whereas its heat-resisting temperature is high. The differences between the two are well known by one skilled in the art, and are differentiated in their practical use. Further, as discussed in detail below, JP '945 teaches against employing a chlorination degree of 58% for the intermediate (surface) layer.

Alternatively, the Examiner argues at page 9 of the Office Action that JP '945 teaches that the chlorination degree of a polymer will affect its fire resistance, thermal stability and moldability and, therefore, it would have been obvious to optimize the chlorination degree of the intermediate layer in JP '945.

Applicants submit, as discussed in greater detail below that JP '945 teaches against such an optimization for the surface layer.

As stated in the Amendment of December 3, 2004, in JP '945 to Watanabe, corresponding to Japanese publication No. 2000-264976A, the surface layer of JP '945 has a chlorination degree of from 50% to less than 58%, but not from 58 to 73%. Accordingly, the combination of JP '945 Yoshizumi may suggest the provision of an antistatic layer on a polyvinyl chloride surface layer (intermediate layer) having a chlorination degree of from 50% to

less than 58%, but could not suggest the provision of an antistatic layer on a PVC layer having a chlorination degree of 58 to 73%.

(In reviewing the arguments at page 17 of the Amendment of December 3, 2004, applicants note that the first complete paragraph contains an error in that a line was inadvertently omitted. In particular, in line 4 of the first complete paragraph, on page 17, after the word "from" the following phrase was omitted--50% to less than 58%, but could not teach the provision of an antistatic layer on a PVC having a chlorination degree of--. Although this line was omitted, applicants believe that the Examiner understood applicants' arguments with respect to this point.)

In JP '945 to Watanabe, the surface layer has a chlorination degree of from 50% to less than 58%, and it improves the chemical resistance and the corrosion resistance of the laminate. See paragraph [0045] thereof. If the chlorination degree of the surface layer is changed to 58% or more, then the chemical resistance and the corrosion resistance of the surface layer are poor and this change will overstep the object of JP '945 to Watanabe. Therefore, the change is not easy for anyone skilled in the art.

JP '945 throughout its disclosure teaches that the surface layer should have a chlorination degree of 50% to less than 58%.

Thus, JP '945 teaches a fire-retardant vinyl chloride resin comprising a base layer and a surface layer. Claims 2 and 3 of JP '945 describe two different laminates, and claim 4 describes that each of these two different laminates comprises a base layer comprising PVC having a chlorination degree of 58 to 73% and a surface layer comprising PVC having a chlorination

degree of between 50 or more to less than 58% as a surface layer. These points are described also in Paragraph [0040] of JP '945.

Paragraph [0023] of JP '945 indicates that the invention of claim 4 of JP '945 (base layer and at least one surface layer) is characterized by the degree of chlorination of the vinyl chloride system resin of a surface layer being 50% or more and less than 58%.

Paragraph [0025] of JP '945, on which the Examiner relies, indicates that if the degree of chlorination of the surface layer is 58% or higher, the chemical resistance of a surface layer, corrosion resistance, etc. become less remarkable.

Paragraph [0024] of JP '945 indicates that to maintain a chemical-resistant balance in the plastic, the degree of chlorination of the surface layer should be 50% or more and less than 58%.

Paragraph [0041] of JP '945 indicates, in the computer translation, that a vinyl chloride with a chlorination degree of 58% or more "is not desirable...as a resin of a surface layer".

Paragraph [0045] of JP '945, on which the Examiner relies, also teaches that the surface layer is for further improving the chemical resistance and corrosion resistance.

Accordingly, applicants submit that one of ordinary skill in the art would not be led to employing a PVC having a chlorination degree of from 58 to 73% in the surface layer of JP '945, since such a surface layer is inferior in chemical resistance, JP '945 aims to provide a plastic that has a chemical-resistant balance achieved with a surface layer having a degree of chlorination of

50% or more and less than 58%, specifically states in paragraph [0041] that a vinyl chloride with a chlorination degree of 58% or more "is not desirable...as a resin of a surface layer".

The present claim 2 is characterized in using PVC having a chlorination degree of 58 to 73% both in the base layer and the intermediate layer. There is no description or teaching in JP '945 of the use of PVC having a chlorination degree of 58 to 73% in both layers. JP '945 is based on the use of PVC having a chlorination degree of 58 to 73% in the base layer and of PVC having a chlorination degree of 50 or more to less than 58% in the surface layer.

The Examiner has referred at page 22 of the Office Action to Paragraphs [0025], [0045] and [0015] of JP '945, and stated that since JP '945 teaches what result effective variables are affected by the degree of chlorination, one would be able to select the necessary properties. (The Examiner refers to Paragraph [0015] of JP '945, but this appears to applicants to be a typographical error in that he intended to refer to Paragraph [0025]).

Applicants do not see where JP '945 teaches that the particular combination set forth in the present claims produce desirable results. Moreover, JP '945 contains no description on the use of a vinyl chloride resin having a chlorination degree of from 58 to 73% for the surface layer. Similarly to the foregoing discussion relating to JP '230, use of a poorly chemically resistant resin having a chlorination degree of from 58 to 73% in view of the JP `945 contrarily results in deterioration of chemical resistance. Thus, intentional adoption of such a resin requires a certain motivation, which, however, does not exist.

As discussed above, the structure according to JP '945 has a base layer comprising a vinyl chloride resin having a chlorination degree of 58 to 73% and 4 to 30 parts by weight of titanium

oxide, and a surface layer comprising a vinyl chloride resin having a chlorination degree of 50 to 57% and 0 to 20 parts by weight of titanium oxide.

The use of such a surface layer in JP '945 was intended by JP '945 to improve the chemical resistance. These conditions of JP '945 are clearly set forth in paragraphs [0023], [0024], [0025], [0040], [0041] and [0045], etc. of JP '945. Moreover, JP '230 in paragraph [0041] indicates that a vinyl chloride resin having a chlorination degree of 58% or more is not desirable for use in a surface layer.

Since the surface layer of JP '945 is employed with the aim of improving chemical resistance using a PVC having a chlorination degree of from 50 to 57°, the use of a PVC having a chlorination degree of from 58 to 73%, which is inferior in chemical resistance, cannot be deduced from JP '945.

It is difficult to understand why the Examiner states that the 50 to 57% chlorination degree vinyl chloride resins of JP '945 can be easily used in the surface layer of JP '945. If the Examiner judges that, since the chlorination degree is similar, they can be easily used, such reasoning is not correct because one of ordinary skill in the art would neither easily adopt nor surmise such resins without any special reason.

In addition, as applicants have previously pointed out, a vinyl chloride resin having a chlorination degree of 58 to 73% is regarded as a different resin from one having a chlorination degree of 50 to 57%, and therefore adoption of the former resin in place of the latter resin as suggested by the Examiner means alteration of the resin. Such alteration is still more difficult to be adopted, especially since there is no motivation to do so.

The Examiner states at page 22 of the Office Action that with respect to applicants' arguments relating to differences in production, properties and costs of the two different resins, he directs applicants' attention to his "above arguments" concerning these differences and the obviousness to use one in place of the other. The "above arguments" to which the Examiner refers are the arguments that the Examiner set forth in connection with the above rejection based on JP '230. Applicants addressed those arguments in applicants' above discussion of JP '230, and adopt similar arguments here.

In particular, the Examiner argued that since the skilled person was well aware of the differences, it follows that the various laminates disclosed by applicants would have been obvious based on the desired balance of properties. Applicants submit, however, that this argument assumes that one of ordinary skill in the art has a concept of what is a desired balance of properties and would know how to achieve the desired balance.

JP '945, however, does not teach that a desired balance of properties can be obtained by the combination set forth in the present claims and, in effect, teaches against such a combination.

The present application teaches that a set of desired properties can be obtained by the combination set forth in the present claims. JP '945 does not disclose or suggested this combination. JP '945 teaches against arranging the layers in a manner to achieve the combination set forth in the present claim, and does not recognize or suggest that the combination in the present claims, in fact, provides a desired balance of properties.

Similarly, the Examiner argued that any desired properties can be achieved by those skilled in the art, since those skilled in the art know the various properties of 58% PVC and 57%

PVC. The Examiner, however, appears to not recognize that there is no teaching in JP '945 that the specific combination set forth in the present claims would produce desirable properties. In fact, JP '945 teaches against this combination.

As stated above, since JP '945 teaches in paragraph [0041] that a vinyl chloride resin having a chlorination degree of 58% or more "is not desirable ... as a resin for a surface layer", a resin having a chlorination degree of 58% or more would never be used by one of ordinary skill in the art without a certain special purpose. If such a resin is intentionally used, a certain motivation is needed. But, there is no such motivation in JP '945, which, on the contrary, contains a description that such a resin is not to be used.

Further, since those skilled in the art recognize the differences of chlorinated poly(vinyl chloride) (i.e. C-PVC) from poly(vinyl chloride), they would not have been led to using chlorinated poly(vinyl chloride), especially since JP '945 teaches that chlorinated poly(vinyl chloride) is not to be used in the surface layer (intermediate layer). The reason is that those skilled in the art can comprehend the disadvantages of using chlorinated poly(vinyl chloride) for the surface layer in advance.

The present invention uses chlorinated poly(vinyl chloride) for the intermediate layer because fire-retardant property need be given priority, even at the expense of chemical resistance to some extent. Such an idea is not disclosed or suggested by JP '945.

With respect to the expected properties of materials that have ranges close to each other, the Examiner's argument that applicants have not provided any evidence that demonstrates that in the present case, an intermediate layer having a chlorination degree of 57% as disclosed by JP

'945 would not have the same properties as an intermediate layer with a chlorination degree of 58% and his argument that applicants have not provided any evidence to support the argument that one would not employ 58% PVC in place of 57%, applicants submit that JP '945 and JP '230 contains such evidence.

Thus, JP '230 discloses in paragraph [0039], as quoted above from the computer translation, that a resin of having a chlorination degree of 58% or more has poor chemical resistance and "is unsuitable as a resin of a surface layer", and discloses in paragraph [0018] of JP '230 that a vinyl chloride resin and a chlorinated vinyl chloride resin (C-PVC) are different in chemical resistance and that a chlorination degree of 50 to 57% is good for chemical resistance. Similarly, JP '945 teaches that a resin having a chlorination degree of 58% or more has poor chemical resistance and "is not desirable" for use in a surface layer. Thus, evidence is of record, and is contained in the very documents cited by the Examiner, that one of ordinary skill in the art would expect different properties and would not employ one in the place of the other. The Examiner simply has chosen to ignore and not comment on this evidence.

Even though the chlorination degree is similar, applicants submit that one of ordinary skill in the art would not be led using a resin having a chlorination degree of 58% or more in place of a resin having a chlorination degree of 57%, especially when the cited documents specifically states that the resin having a chlorination degree of 58% or more "is unsuitable as a resin of a surface layer" or "is not desirable".

Moreover, with an increase in the chlorination degree of the resin, the ratio of dechlorination rises during heat molding, causing the resin to get yellow due to resin

decomposition. For this reason, a formulation for molding a vinyl chloride resin is necessarily different from that for molding a chlorinated vinyl chloride resin. In this way, the aforementioned resin alteration does not end with the alteration of resin itself, but inevitably causes some accompanying changes. From such a viewpoint, too, those skilled in the art regard the two resins as belonging to different types. Further, without a significant reason for alteration, resin alteration can never be conducted so easily.

Turning now to Yoshizumi, the Examiner relies on Yoshizumi for a teaching of an antistatic layer.

Yoshizumi merely discloses the use of an antistatic coating on a base material. Yoshizumi does not contain any information on the use of a base layer that comprises a vinyl chloride resin having a chlorination degree of from 58 to 73% and free from any titanium compound, wherein the thickness of the base layer is from 1 to 15 mm, in combination with the use of an intermediate layer that comprises a vinyl chloride resin having a chlorination degree of from 58 to 73% and free from any titanium compound, and has a composition different from that of the base layer, wherein the thickness of the intermediate layer is from 30 to 350 μm (claim 2) or 50 to 350 μm (claim 24). Thus, Yoshizumi does not supply the deficiencies of JP '945.

Turning now to claim 19, which depends from claim 2 and recites that the antistatic layer is comprised of a vinyl chloride resin having a chlorination degree of 58 to 73%, and the Examiner's reliance on the teachings of Yoshizumi with respect to claim 19, this patent discloses the use of various resins as a binder of an antistatic casting, among which a vinyl chloride resin

is mentioned for use in an antistatic layer, but Yoshizumi does not teach or suggest the use of PVC having a chlorination degree of 58 to 73% in an antistatic layer.

The Examiner states at page 9 in the Office Action that, because JP '945 discloses in paragraph [0015] (sic) that the chlorination degree influences fire resistance, thermal stability and moldability, it would have been obvious to control the chlorination degree of an antistatic layer in order to control these properties. Applicants believe the Examiner intended to refer to paragraph [0025] of JP '945.

Applicants point out, however, that the antistatic layer proposed by the Examiner functions as a surface layer. As discussed above, JP '945 teaches in paragraph [0041] against the use of a PVC having a chlorination degree of from 58 to 73% as a surface layer. Therefore, one of ordinary skill in the art would not have been led to the use of an antistatic layer having such a chlorination degree as recited in claim 19.

Further, JP '230 states in paragraph [0039] that a PVC having a chlorination degree of 58% or more "is unsuitable as a resin of a surface layer". In addition, U.S. Patent 6,316,118, cited in the Information Disclosure Statement of June 30, 2004, states at column 15, lines 9 to 13, that as the resin of a surface layer a vinyl chloride "having a chlorination degree of 58% or more is not desirable because chemical resistance and elongation are not so good and bending cannot be made easily...".

Based on these, PVC having a chlorination degree of 58 to 73 % as set forth in claim 19 is hardly thinkable as the resin of the antistatic layer.

Since claim 19 restricts the chlorination degree of the vinyl chloride resin used for the antistatic layer to from 58 to 73%, Yoshizumi does not disclose or suggest such a chlorination degree of the resin used for the antistatic layer.

The Examiner indicates at pages 22 and 23 of the Office Action that JP '945 teaches that the chlorination degree of PVC is a result effective variable and therefore can be selected at will depending on desired chemical and/or physical properties of the particular PVC layer, including an antistatic layer.

The Examiner, however, does not identify what are the desired combination of chemical and physical properties. The present application that teaches that the combination set forth in the present claims results in a desired combination of chemical and physical properties. From the teachings of JP '945, JP '230 and U.S. Patent 6,316,118, one of ordinary skill in the art would be led to expect that the combination of the present invention is not desirable.

Further, which kind of resin is used for the antistatic layer depends on the use application of the molding provided with this antistatic layer. Since Yoshizumi relates to an antistatic paint that can be used for various applications, it is necessary to select the most appropriate resin as the resin applicable to the fire-retardant vinyl chloride resin molding of the present invention. Yoshizumi describes that, in addition to vinyl-based polymers, various resins such as acrylic resin, polycarbonate, etc. can be used as the binder. And, to select a specific resin from these many resins, a special reason is necessary.

In addition, even if a vinyl chloride resin is ever selected as the binder from a large number of vinyl based resins, it is usually a common practice to adopt a vinyl chloride resin having a chlorination degree of 56.8% that is most widely in use. Intentional adoption of a vinyl chloride resin having a chlorination degree of from 58 to 73% requires a special reason, on which Yoshizumi is utterly silent, including no suggestion, either.

In paints using a vinyl chloride resin, poly(vinyl chloride) having a chlorination degree of 56.8% is usually used, and chlorinated poly(vinyl chloride) having a chlorination degree of from 58 to 73% is not used, because poly(vinyl chloride) is superior to chlorinated poly(vinyl chloride) in moldability, cost, chemical resistance, discoloration, weather resistance, etc. Even if there exists the fact that chlorinated poly(vinyl chloride) is superior to poly(vinyl chloride) in fire retardant property, formulation of a paint by using chlorinated poly(vinyl chloride) requires breaking-down of the conventional common sense, accompanying a serious risk. In other words, such a risk cannot be challenged without a sufficient merit in the use of chlorinated poly(vinyl chloride).

Claim 19 uses a vinyl chloride resin having a chlorination degree of from 58 to 73% for the antistatic layer in order to ensure fire retardant property, although the layer is extremely as thin as 0.1 to 1.5 μm. By virtue of this measure, a transparent molding with enhanced fire retardant property has been obtained in claim 19 since all of the base layer, the intermediate layer and the antistatic layer are composed of a vinyl chloride resin having a chlorination degree of from 58 to 73%.

In the present application, chlorinated poly(vinyl chloride) is used in the antistatic layer recited in claim 19 to ensure the fire retardant property of the molding although the thickness of the antistatic layer is extremely thin.

In general, PVC having a chlorination degree of 56.8% is used as a binder resin, but PVC having a chlorination degree of 58% or more is not used, and therefore it is natural that using that PVC having a such a high chlorination degree of from 58 to 73% would not be taken into consideration.

Applicants submit that there is no suggestion or motivation to employ a 58 to 73% PVC in any antistatic layer, and that one would not consider employing such a high chlorination degree in an antistatic layer.

In view of the above, applicants submit that JP '945 and Yoshizumi do not defeat the patentability of the above claims and, accordingly, request withdrawal of this rejection.

Claims 1, 2, 4, 17, 21, 22 and 24 have been rejected under 35 U.S.C. § 103(a) as obvious over JP '945 in view of Holley.

The Examiner sets forth a detailed statement of this rejection in Paragraph 9, beginning at page 10 of the Office Action.

This rejection is generally similar to the rejection in Paragraph 8 above, except that the Examiner now relies on Holley as a secondary reference for showing an antistatic layer instead of Yoshizumi.

As noted above, claims 1, 4, 17 and 22 have been canceled, thus leaving only claims 2, 21 and 24 as being subject to this rejection.

In response, applicants rely on the same arguments they set forth above in connection with the rejection in Paragraph 8 to distinguish over JP '945.

Further, with respect to the antistatic layer of claims 2 and 24, applicants acknowledge that one of ordinary skill in the art might consider that Holley suggests providing an antistatic layer on the surface of a molding. The combination of JP '945 with Holley, however, would not have led one of ordinary skill in the art to the subject matter of claims 2 and 24 because neither of these references discloses or suggests the combination of the base layer and intermediate layer of claims 2 and 24.

Still further, Holley does not disclose or suggest the long carbon fiber recited in claim 24.

In addition, with respect to claim 21, it depends from claim 19 or 20.

Holley does not disclose or suggest the subject matter of claims 19 or 20, or the conductive materials of claim 21 and, therefore, does not disclose or suggest the subject matter of claim 21.

In particular, with respect to claim 19, Holley nowhere discloses the use of a vinyl chloride resin, and thus does not disclose or suggest the use of a vinyl chloride resin in an antistatic layer as set forth in claim 19, or the use of a vinyl chloride resin having a chlorination degree of 58 to 73% in an antistatic layer as recited in claim 19.

With respect to claim 20, Holley does not disclose or suggest that a binder resin of an antistatic layer comprises a UV curing or thermosetting resin. The antistatic layer in Holley is obtained by coating a dispersion of an ammonium salt or the like in a water-soluble polymer. Specifically, Holley discloses polymers such as an acrylic resin, urethane, and ethylene/vinyl

acetate copolymer col. See 5, lines 32 to 35. However, UV-curable resins and thermo-setting resins as set forth in claim 20 are not set forth in Holley.

Further, Holley does not disclose or suggest the specific conductive materials of tin oxide, titanium oxide and carbon fiber set forth in claim 21.

Accordingly, applicants submit that claim 21 is patentable over JP '945 and Holley.

Though provision of an antistatic layer on the surface of a molding may be suggested by Holley, the specific antistatic layers set forth in claims 19 to 21 are never taught or suggested by Holley.

In view of the above, applicants submit that JP '945 and Holley do not disclose or render obvious the subject matter of claims 2, 21 and 24 and, accordingly, request withdrawal of this rejection.

Claims 1, 2, 19, 20 and 21 have been rejected under JP '520 in view of Yoshizumi.

The Examiner sets forth a detailed statement of this rejection in Paragraph 10, beginning at page 12 of the Office Action.

Claim 1 has been canceled, leaving only claims 2, 19, 20 and 21 as being subject to this rejection. Of these claims, only claim 2 is independent.

Applicants submit that JP '520 and Yoshizumi do not disclose or render obvious the subject matter of claim 2 and, accordingly, request withdrawal of this rejection.

The Examiner asserts that he was relying on JP '520 to teach a laminate with a base layer having a chlorination degree of less than 56%.

Claim 2 of the present application, however, recites a chlorination degree of 58 to 73% for the base layer.

JP '520 discloses single-layered or laminate layered moldings having the designations A1 to A7, B1 to B6, C and D1 to D7. Of these, A1 to A5, B1 to B4, C and D1 to D3 are single-layered moldings and, therefore, do not teach or suggest the laminates of the present invention.

The remaining A6, A7, B5, B6 and D4 to D7 moldings are laminate-layered moldings, but none of these moldings satisfy the recitations of claim 2.

Applicants discussed a number of these moldings in the Amendment of December 3, 2004. Applicants submit the following corrective and clarifying remarks with respect to the laminate-layered moldings A6, A7, B5, B6 and D4 to D7.

With respect to molding A6 of JP `520, detailed descriptions are given in paragraphs [0071] to [0074], where a fire retardant, except a foaming agent, is incorporated in the base layer and a foaming agent is incorporated in the surface layer. A description is given in paragraph [0072] that the vinyl chloride resin used herein includes those set forth in A1 to A4.

The vinyl chloride resins for moldings A1 to A4 are the same, and are described in paragraph [0047] as being resins (a) to (e) for the molding A1.

Paragraph [0047] of JP '520 discloses the following resins (a) to (e) for the molding A1: (a) a vinyl chloride resin having a chlorination degree of about 56%, (b) a vinyl chloride resin having a chlorination degree of from about 58% to about 73%, (c) a mixed resin containing these, (d) a mixture resulting from adding vinyl acetate or an acrylic resin to these vinyl chloride resins, and (e) a copolymer of a vinyl chloride resin with vinyl acetate and/or ethylene.

Paragraph [0048] of JP '520 indicates that when resins of (c), (d) and (e) are used, the average chlorination degree is adjusted at from about 50 to about 73%.

Thus, for molding A6, JP '520 does not provide any specific details on the resins to be used, except to say that the vinyl chloride resins of A1 to A4 can be used. Since A1 to A4 can employ resins five different resins (a) to (e), there is a possibility of 25 different resin combinations for the base layer and surface layer, with only one of those combinations (the use of resin (c) in both the base layer and surface layer) necessarily resulting in the combination of claim 2.

Since JP '520 does not provide any specific guidance that would lead one of ordinary skill in the art to this combination, applicants submit that resin molding A6 of JP '520 does not disclose or suggest the combination recited in claim 2.

Moreover, JP '520 does not disclose the thickness of the surface layer of the A6 molding. Applicants point out that whenever JP '520 discloses the thickness of the surface layer for a molding, it is at least 0.4 mm. Applicants submit that there is no teaching or suggestion in molding A6 of the combination of a base layer and a surface layer, each of which has a chlorination degree of 58 to 73%, with the surface layer having a thickness of 30 to 350 μm.

In view of the above, applicants submit that molding A6 does not disclose or suggest the recitations of claim 2.

With respect to molding A7, it is disclosed in paragraphs [0075] to [0078] of JP '520. The resins used in molding A7 of JP `520 are poly(vinyl chloride) having a chlorination degree of from 50 to 57% for the base layer, and chlorinated poly(vinyl chloride) having a chlorination

degree of from 58 to 73% for the surface layer. Accordingly, molding A7 does not satisfy the recitations of the base layer of the present claims.

In view of the above, applicants submit that molding A7 does not disclose or suggest the recitations of claim 2.

With respect to molding B5 of JP '520, it is described in paragraphs [0104] to [0111]. The base layer of molding B5 is comprised of a vinyl chloride resin and contains 5 to 50% of a titanium compound. Accordingly, molding B5 does not disclose or suggest the base layer of claim 2 which is free of any titanium compound.

Further, the thickness of the surface layer of molding B5 is 0.4 to 1.1 mm as disclosed in paragraph [0108]. This thickness does not satisfy claim 2. In view of the above, molding B5 does not satisfy the recitations of the surface layer of the present claims.

In view of the above, applicants submit that molding B5 does not disclose or suggest the recitations of claim 2.

For molding B6, it is described in paragraphs [0112] to [0114] of JP '520 and contains a titanium compound in the base layer. Accordingly, molding B6 does not disclose or suggest the base layer of claim 2 which is free from any titanium compound.

Further, the thickness of the surface layer in B6 is the same as in B5, as disclosed in paragraph [0113]. As discussed above, the thickness of the surface layer in B5 is 0.4 to 1.1 mm as disclosed in paragraph [0108]. Accordingly, the thickness of the surface layer in B6 does not satisfy the recitations of claim 2.

In view of the above, applicants submit that molding B6 does not disclose or suggest the recitations of claim 2.

With respect to molding D4 of JP '520, it is described in paragraphs [0153] and [0154] of JP '520. Molding D4 has a surface layer comprised of a vinyl chloride resin having a degree of chlorination of 50% and a thickness of 0.4 to 2 mm. Accordingly, molding D4 does not satisfy the recitations of claim 2.

In view of the above, applicants submit that molding D4 does not disclose or suggest the recitations of claim 2.

With respect to molding D5 of JP '520, it is described in paragraphs [0155] and [0156] of JP '520. The computer translation of JP '520 indicates, in paragraphs [0155] that the vinyl chloride resin for both the base layer and surface layer of D5 has a chlorination degree of 58 to 73%. Paragraph [0156] of JP '520 indicates that the surface layer can be made from a common vinyl chloride resin to increase the chemical resistance. Paragraph [0156] thus indicates that the surface layer can have an average degree of chlorination of 50 to 57%.

The surface layer of molding D5 has a thickness of 0.4 to 2 mm.

Accordingly, molding D5 does not satisfy the recitations of the present claims.

With respect to molding D6 of JP '520, it is described in paragraphs [0157] to [0158]. Molding D6 has a surface layer comprised of a vinyl chloride resin having a degree of chlorination of 56% and a thickness of 0.4 to 2 mm. In addition, molding D6 has a base layer with a chlorination degree of 50 to 57%.

Accordingly, molding D6 does not satisfy the recitations of claim 2.

With respect to molding D7 of JP '520, it is described in paragraphs [0159] and [0160]. Molding D7 has a base layer comprised of a vinyl chloride resin having a degree of chlorination of 56%. The surface layer of molding D7 is comprised of a vinyl chloride resin having a degree of chlorination of 58 to 73% and a thickness of 0.4 to 2.0 mm. Accordingly, molding D7 does not satisfy the recitations of claim 2.

With respect to claims 19, 20 and 21, these claims depend from claim 2.

Turning now to Yoshizumi, the Examiner relies on Yoshizumi for a teaching of an antistatic layer.

Yoshizumi merely discloses the use of an antistatic coating on a base material. Yoshizumi does not contain any information on the use of a base layer that comprises a vinyl chloride resin having a chlorination degree of from 58 to 73% and free from any titanium compound, wherein the thickness of the base layer is from 1 to 15 mm, in combination with the use of an intermediate layer that comprises a vinyl chloride resin having a chlorination degree of from 58 to 73% and free from any titanium compound, and has a composition different from that of the base layer, wherein the thickness of the intermediate layer is from 30 to 500 μm (claim 2) or 50 to 350 μm (claim 24). Thus, Yoshizumi does not supply the deficiencies of JP '520.

Turning now to claim 19, which depends from claim 2 and recites that the antistatic layer is comprised of a vinyl chloride resin having a chlorination degree of 58 to 73%, and the Examiner's reliance on the teachings of Yoshizumi with respect to claim 19, this patent discloses the use of various resins as a binder of an antistatic casting, among which a vinyl chloride resin

is mentioned for use in an antistatic layer, but Yoshizumi does not teach or suggest the use of PVC having a chlorination degree of 58 to 73% in an antistatic layer.

(At page 21 of the Amendment of December 3, 2004, item (iii) referred to "claim 9". Applicants point out, however, that claim 19 was intended).

Further, which kind of resin is used for the antistatic layer depends on the use application of the molding provided with this antistatic layer. Since Yoshizumi relates to an antistatic paint that can be used for various applications, it is necessary to select the most appropriate resin as the resin applicable to the fire-retardant vinyl chloride resin molding of the present invention. Yoshizumi describes that, in addition to vinyl-based polymers, various resins such as acrylic resin, polycarbonate, etc. can be used as the binder. And, to select a specific resin from these many resins, a special reason is necessary.

In addition, even if a vinyl chloride resin is ever selected as the binder from a large number of vinyl based resins, it is usually a common practice to adopt a vinyl chloride resin having a chlorination degree of 56.8% that is most widely in use. Intentional adoption of a vinyl chloride resin having a chlorination degree of from 58 to 73% requires a special reason, on which Yoshizumi is utterly silent, including no suggestion, either.

In paints using a vinyl chloride resin, poly(vinyl chloride) having a chlorination degree of 56.8% is usually used, and chlorinated poly(vinyl chloride) having a chlorination degree of from 58 to 73% is not used, because poly(vinyl chloride) is superior to chlorinated poly(vinyl chloride) in moldability, cost, chemical resistance, discoloration, weather resistance, etc. Even if

there exists the fact that chlorinated poly(vinyl chloride) is superior to poly(vinyl chloride) in fire retardant property, formulation of a paint by using chlorinated poly(vinyl chloride) requires breaking-down of the conventional common sense, accompanying a serious risk. In other words, such a risk cannot be challenged without a sufficient merit in the use of chlorinated poly(vinyl chloride).

Claim 19 uses a vinyl chloride resin having a chlorination degree of from 58 to 73% for the antistatic layer in order to ensure fire retardant property, although the layer is extremely as thin as 0.1 to 1.5 μm. By virtue of this measure, a transparent molding with enhanced fire retardant property has been obtained in claim 19 since all of the base layer, the intermediate layer and the antistatic layer are composed of a vinyl chloride resin having a chlorination degree of from 58 to 73%.

In the present application, chlorinated poly(vinyl chloride) is used in the antistatic layer recited in claim 19 to ensure the fire retardant property of the molding although the thickness of the antistatic layer is extremely thin.

In view of the above, applicants submit that claims 2, 19, 20, 21 are patentable over JP '520 in view of Yoshizumi and, accordingly, request withdrawal of this rejection.

Claims 1, 2, 20 and 21 have been rejected under 35 U.S.C. § 103(a) as obvious over JP '520 in view of Holley.

The Examiner sets forth a detailed statement of this rejection in Paragraph 11, beginning at page 13 of the Office Action.

This rejection is similar to the rejection in Paragraph 10 above, except that the Examiner relies on Holley instead of Yoshizumi as a secondary reference for teaching an antistatic layer.

As noted above, claim 1 has been canceled, thus leaving only claims 2, 20 and 21 as being subject to this rejection.

In response, applicants rely on the same arguments they set forth above in connection with the rejection in Paragraph 10 to distinguish over JP '945.

Further, with respect to the antistatic layer of independent claim 2, applicants acknowledge that one of ordinary skill in the art might consider that Holley suggests providing an antistatic layer on the surface of a molding. The combination of JP '520 with Holley, however, would not have led one of ordinary skill in the art to the subject matter of claim 2 because neither of these references discloses or suggests the combination of the base layer and intermediate layer of claim 2.

Further, with respect to claim 20, Holley does not disclose or suggest that a binder resin of an antistatic layer comprises a UV curing or thermosetting resin. The antistatic layer in Holley is obtained by coating a dispersion of an ammonium salt or the like in a water-soluble polymer. Specifically, Holley discloses polymers such as an acrylic resin, urethane, and ethylene/vinyl acetate copolymer. See col. 5, lines 32 to 35. However, UV-curable resins and thermo-setting resins as set forth in claim 20 are not set forth in Holley.

In addition, with respect to claim 21, it depends from claim 19 or 20. However, Holley does not disclose or suggest the subject matter of claims 19 or 20, or the conductive material of claim 21.

In particular with respect to claim 19. Holley nowhere discloses the use of a vinyl chloride resin, and this does not disclose or suggest the use of a vinyl chloride resin in an antistatic layer as set forth in claim 19 or the use of a vinyl chloride resin having a chlorination degree of 58 to 73% in an antistatic layer as recited in claim 19.

Further, as discussed above, Holley does not disclose or suggest the resins set forth in claim 20.

Still, further, Holley does not disclose or suggest the specific conductive materials of tin oxide, titanium oxide and carbon fiber set forth in claim 21.

Accordingly, applicants submit that claim 21 is patentable over JP '920 and Holley.

Though provision of an antistatic layer on the surface of a molding may be suggested by Holley, the specific antistatic layers set forth in claims 19 to 21 are never taught or suggested by Holley.

In view of the above, applicants submit that JP '920 and Holley do not disclose or render obvious the present invention and, accordingly, request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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